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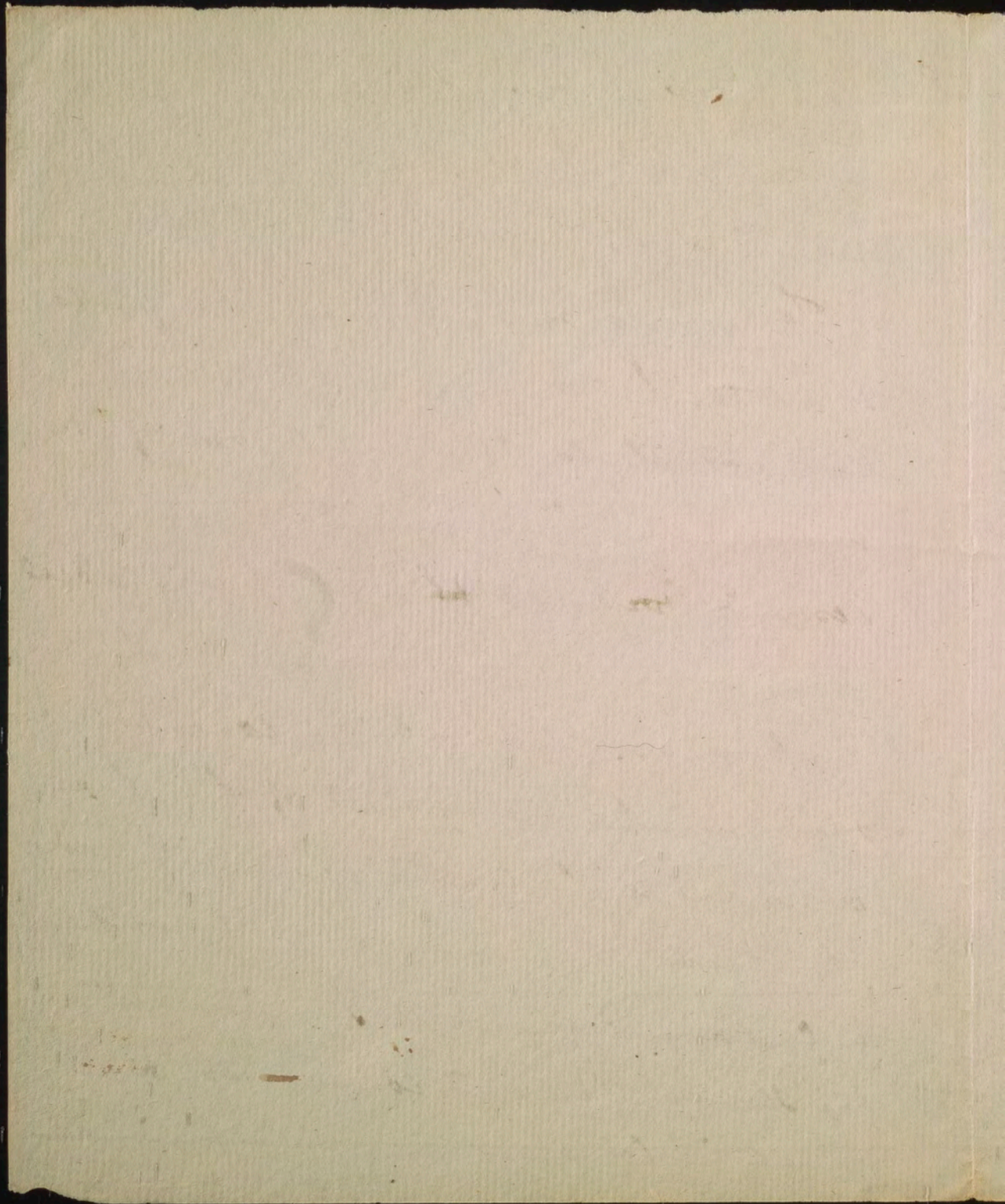
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we now know it disposes it to a
more speedy Coagulation only by
reducing the force of the blood vessels.

It would seem from all these facts,
that the less the blood is acted upon by
the blood vessels, the more it loses of its
animalized state, and the sooner it
descends down to ~~the~~ a level with dead
or non animalized matter, such par-
ticularly as gellies which coagulate as
soon as they are deprived of their heat,
or exposed to the cool air: But the more
the blood vessels act upon it, within
a certain degree called Sympocha Action,
the slower the blood coagulates, and
that in consequence of the animal

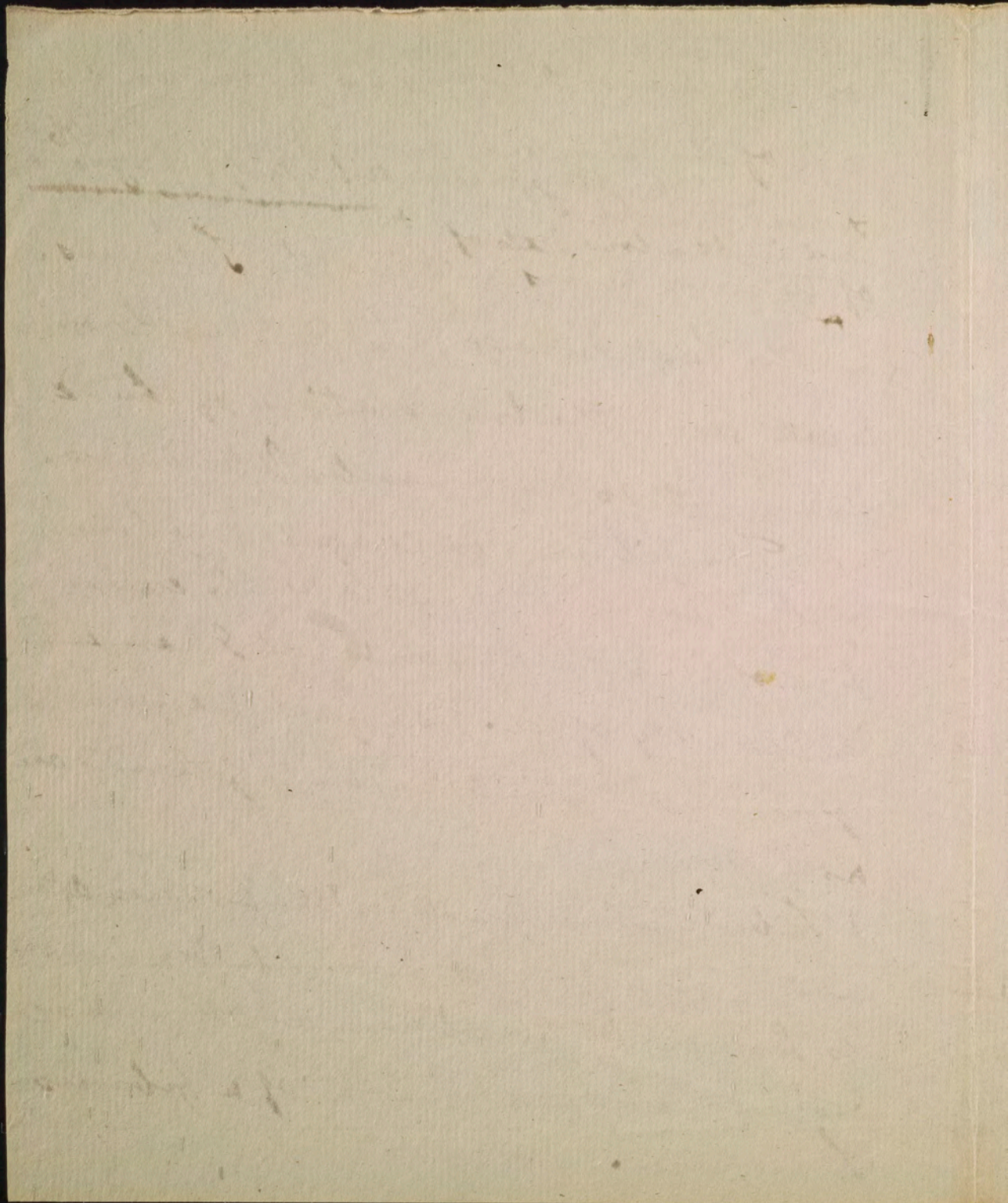


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Qualities it acquires by the stimulus
of the blood vessels resisting the influence
of the cool air upon it. The blood in
this respect ^{is} ~~with the whole body~~ ^{is upon}
upon a footing with the whole body ^{which}
resists the effects of cold air, in proportion
as it is excited by motion, or cordial
stimulents or drinks. It is agreeable to
observe the same social or reciprocal
intercourse between the blood vessels, &
the blood that takes place between the heart
and brain. They both mutually stimulate
each other into ~~health~~ life & health, &
they both die from the excess or abstrac-
-tion of each other's stimulus. The fibrin
or lymph of the blood is as certainly
dissolved as certainly from the febleness

or Absence of Action, as from an ex-
 =cess of it. This has been frequently ob-
 =served in the ^{in the prostrate state of malignant,} Scurvy, ~~in the low state~~
 and in the low state of
 of typhus fevers, and in the Tetanus.
 In the last disease, the Arteries become
 weak from the translation of their ex-
 =citement to the muscles & tendons.

The fibrin, or coagulating lymph
 of the blood is supposed to be the exclusive
 Seat of its Vitality, or what I have called
 its Capacity of life. The facts & arguments
 upon which this opinion is founded are
 as follow.

1 Fibrin when found in the Arteries after
 death, or when thoroughly deprived of
 its Serum by Absorption or otherwise,
 discovers evident marks of a fibrous
 Structure.



2 Fibrin discovers motion when subjected to galvanic influence similar to that which is observed in a muscle.

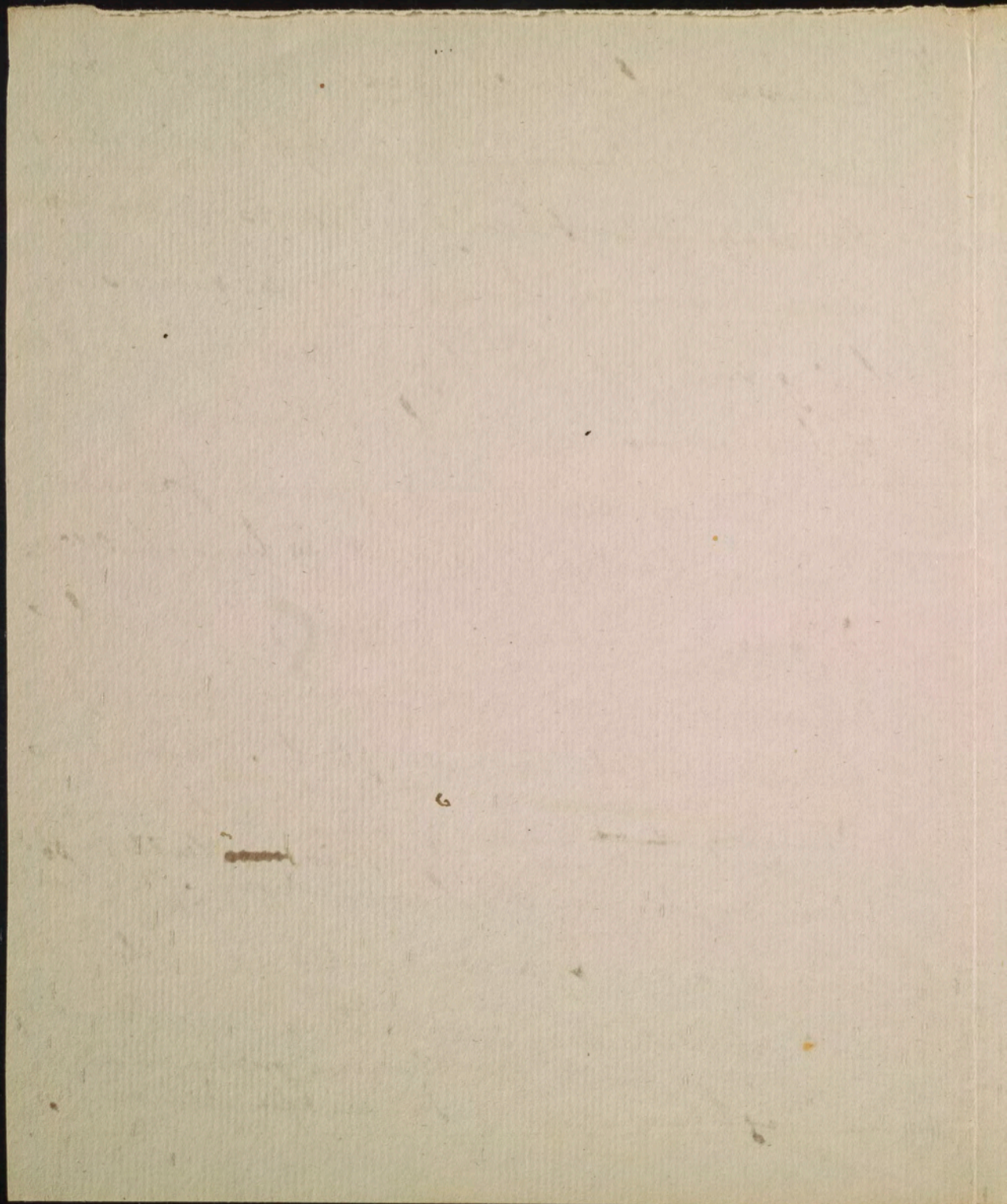
3 Mr Petit discovered contraction, and dilatation in the fibrin analogous to the same actions in a muscle; in a false aneurism in a person at Lyons, and on a part where there was no artery large eno to produce a sensible pulsation. Mr Dumas who relates this fact in his physiology asks immediately afterwards, whether the pulsations of the arteries may not be assisted by the alternate contractions and dilatation of the lymph of the blood? —

4 The Coagulation of the blood is accelerated, and retarded by all the

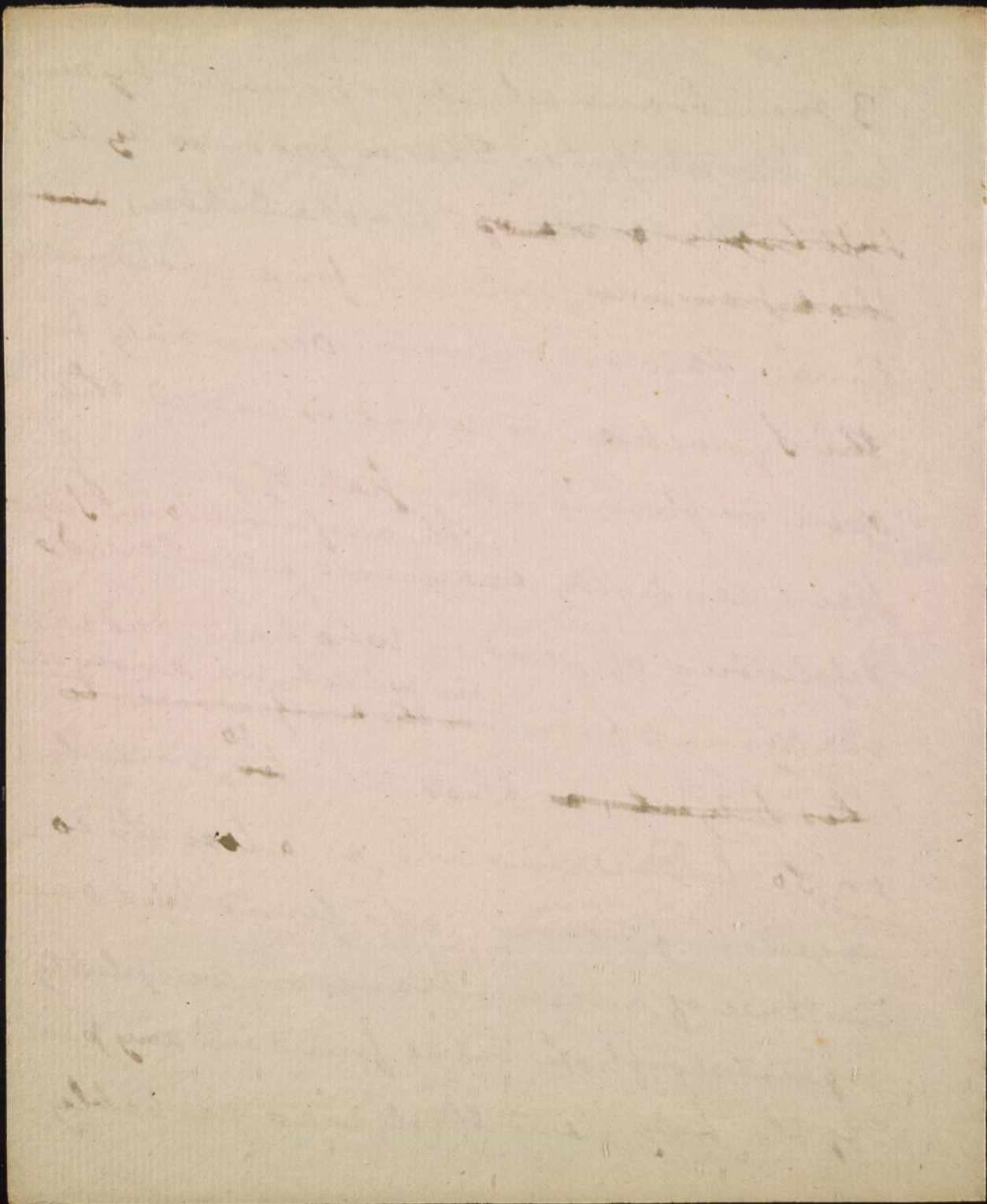
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Causes which encrease, retard, or
destroy the Contraction of the muscles.
 It coagulates slowly in proportion to
 the muscular texture it acquires by
 being acted upon by a certain grade
 of Stimulus in the blood vessels

There are three different forms
 assumed by the coagulating lymph accor-
 =ding to the different grades of Arterial
 Action upon it. 1 The Appearance of a
 relaxed muscle, or Dead flesh. This is pro-
 =duced by ^{a moderate} ~~that~~ Degree of Action which takes
 place in pleurisy & Rheumatism. ^{It is some level buff.} 2 The
 Appearance of a Contracted muscle, or
 a suppled Appearance. This is produced by
 a higher Degree of ^{or pleuritic or rheumatic} Synochal Action.

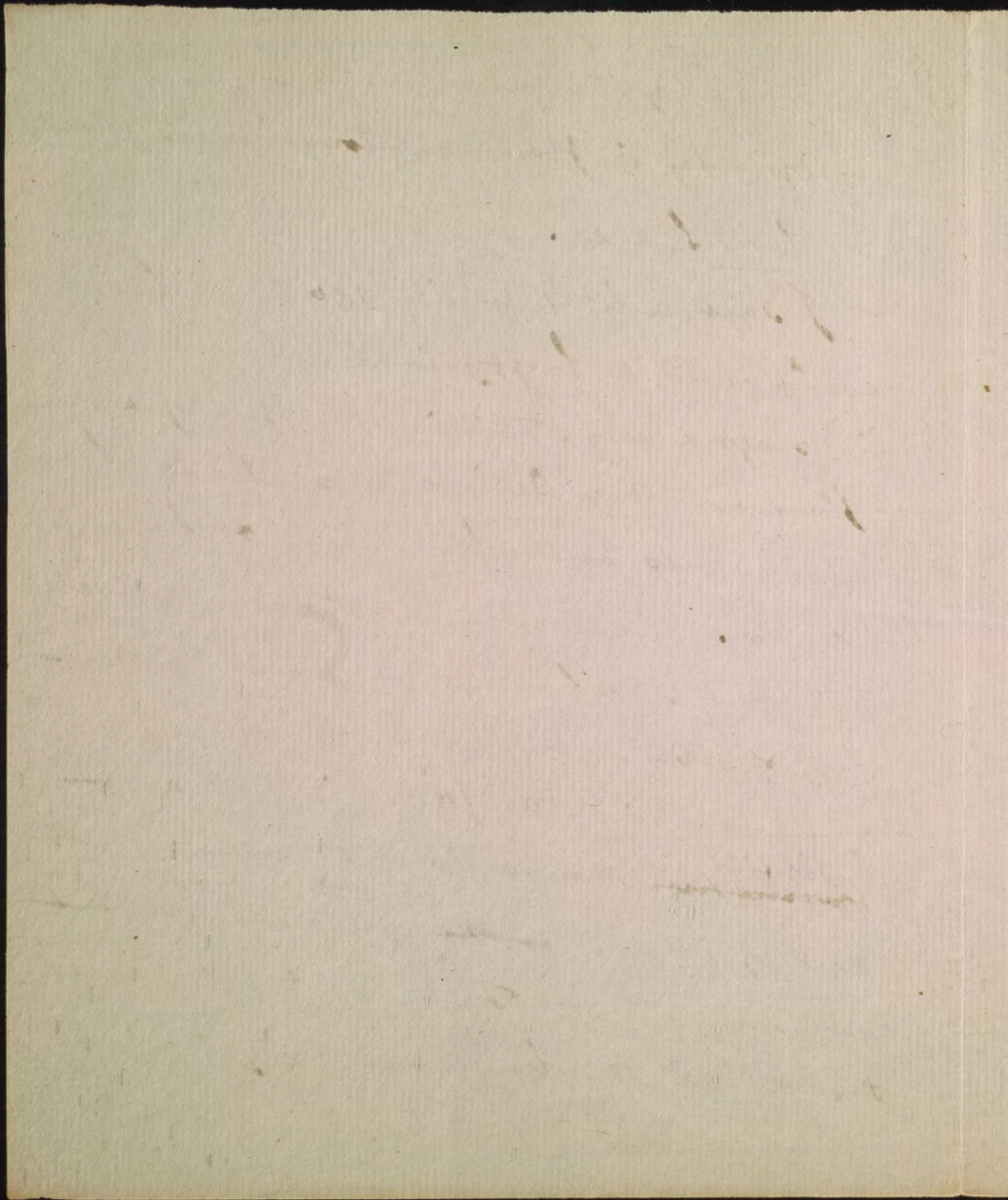


3 membrane which is pervaded by nerves
 and blood vessels. This is produced by a
~~still higher grade of~~ Synocha action, and
~~that pervades~~ protracted for a considerable
 time. This membrane occurs only in
 the Synocha, or what is called the
 open inflammatory state of fever. I
 have carefully examined ^{with a reference to this subject} Leintards
 dissections of persons who have died with
 malignant fever ^{in which we know the} ~~with a reference to~~
~~this subject,~~ blood to be ^{so} too much
 on so little stimulated as to lose its co-
 agulating power, and found but one
 instance of a membrane or completely
 organized flesh being found in any part
 of the body, and that was probably



9 produced by the fever being Typhoid, that is openly inflammatory in its first or last stage.

I said a little while ago that blood exhibited a buffy coat when drawn in pregnancy. This is the effect of an inflammatory Action imparted to the blood vessels by the stimulus of the distended Uterus. This inflammatory Action is wisely intended I believe to increase the quantity of fibrin in the blood for the purpose of nourishing the fetus in Utero, ^{for} fibrin is the basis of Animal matter ~~formation~~ ^{animal} and of course ~~is the~~ constitutes ~~the~~ nourishment. From this, it would seem that the human body is not only conceived and brought forth in



disease, but that the matter from
 which it ^{derives its growth} ~~is formed~~ in the wound is
 the product of a disease, that is of an
 inflame^d action in the blood vessels.

5 I infer that the fibrin is the seat of ^{it}
 what is called vitality in the blood from ^{the}
 following multiplying sooner ^{than the} ~~when it is~~
 Crap aneurisms of blood in which there
 appeared no buff, or fibrin, and much
 sooner than the serum of the blood.

This has been ascertained by an experi-
 -ment made by Sir John Pringle, and
 related in his Appendix to his treatise upon
 the diseases of the British Army. This
 experiment was repeated at my request
 by Mr Thomson in the Penney^s hospital

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10, and with other circumstances which
 added additional support to the doctrine
 I am now delivering. He took a portion
 of the buff of the blood of a person in
 an inflam^t fever, and an equal portion
 of the buff^{fibrin} of the blood of a person in
 good health, and exposed them both to
 the same degree of heat in similar
 situations. The former putrefied sooner
 than the latter. This experiment was
 repeated, and with a similar result.
 The more speedy putrefaction^{buff of the} of the
 blood in an inflam^t fever was occa-
 sioned by its being more animated
 by the stimulus of disease. Thus you
 see life is excited in the ~~flav~~ a part

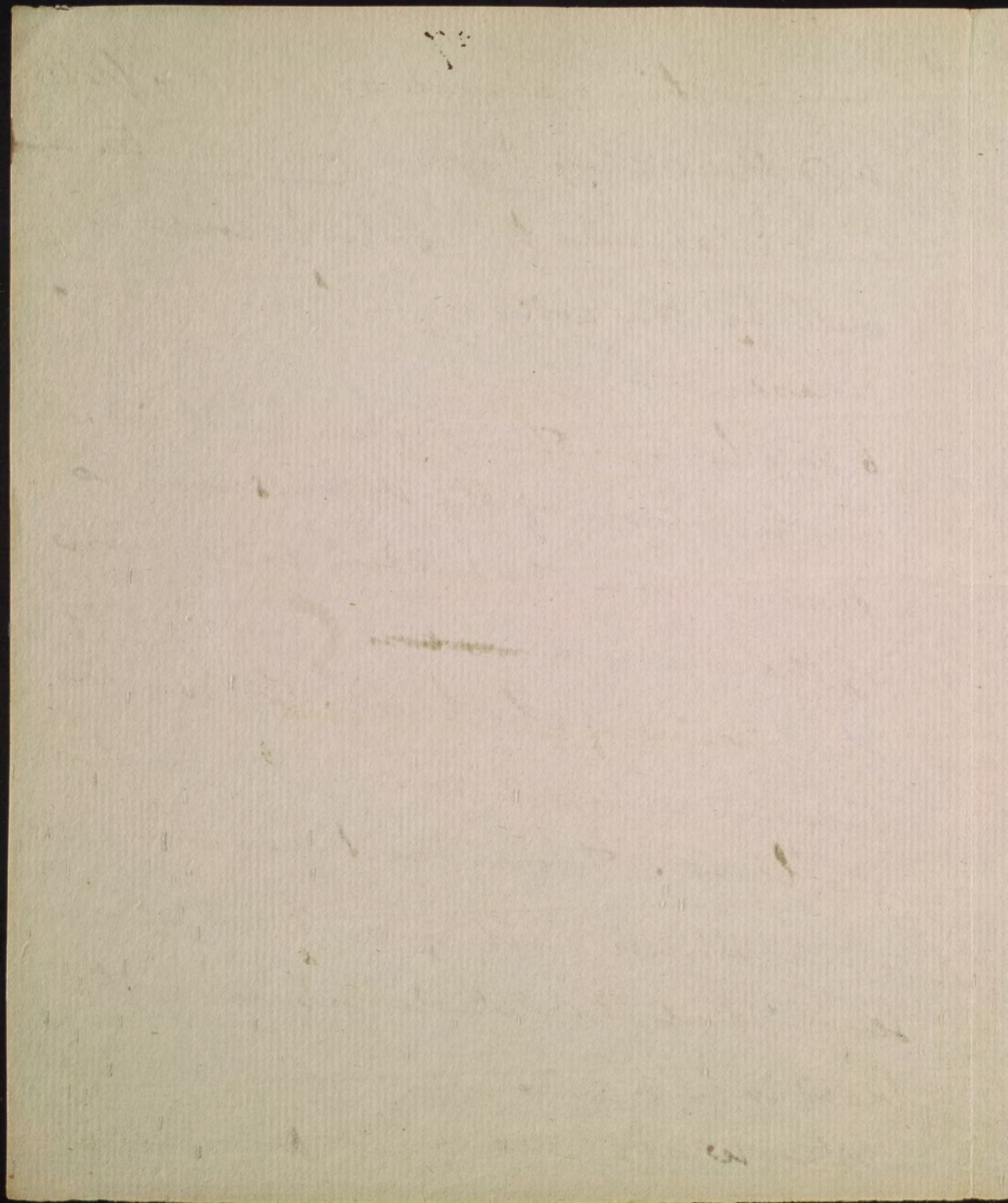
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of the fluids of the body, as well as in
all the solids, by means of Stimulus.
As ^{the} Stimulus of disease increases the
Quantity and force of life in the solids,
so it does in the fibrin of the blood.

Again - We observe the Stimulus of dis-
-ease to produce not only sensibility in
parts devoid of it in health, but irrita-
-bility or Contractility, ^{as in the bones and tendons.} ~~it~~ We observe that
have the same effect upon the fibrin
of the blood. It imparts ϕ contractility
to it when it is cupped, and sensibility to
it when it is ~~converted~~ ^{converted} into membrane.
From these facts I have been led to con-
-sider the fibrin of the blood like the
bones and tendons as animalized

only in their natural or healthy state,
and that they become animated, that
that is acquire sensibility & contractility
only by the additional stimulus of
Disease. —

6th and lastly. The sudden death induced
by the poison of the Viper seems to
depend upon the sudden extinction
of the ~~animation~~ qualities of
the fibrin of the blood. It does no
harm unless it come in contact with
the blood. From the suddenness with
which death is produced, it would
seem that the whole fibrin of the
blood is a homogeneous mass, or in
other words, one great animalised



muscle. Every part of it dies from an impression made upon a ~~single~~ small part of it by what I have called the Sympathy of Continuity.

From the history that has been given of the ~~blood~~ effects which Stimuli induce ^{upon} the fibrin of the blood, a new nomenclature seems necessary to designate the changes which are produced upon it. Its Disposition ~~should~~ be called its apparent Death whether by an excup or Abstraction of Stimulus should be called Apparent Death. When it is restored to its natural consistency, by means of bleeding or Stimulants it should be said to be recupitated.

I have said membrane is produced

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from the fibrin of the blood. It occurs ^{more} ~~more~~ frequently after pneumonia and Cynanche trachealis than after any other form of inflammatory fever. The lungs ^{are made to} adhere to the pleura, by it, and the wind pipe is obstructed by it. Besides membrane, polypii, Schirroi and the basis of Calculi and Pus are formed from it.

The last remark I shall make is only to repeat that it is ~~its~~ the basis of the nourishment of the body. It is admirably fitted for this purpose, being of a very nutritive nature. ~~One~~ One reason why blood was forbidden as ^{was} aliment to the Jews, because it conveyed nourishment into the body that did not ^{from its quantity} accord with the heat of the Climate inhabited by them. ~~For the same reason~~ ~~the same quantity of~~

dissolved in it. These are
✓ ~~Albumen~~ Albumen - gelatin & al-
bida - Sulphur, & some neutral salts. The
Albumen is obtained by coagulating it
by means of heat. It contains like-
-wise some lymph dissolved in it in
which case

any other part of an animal
by 29.

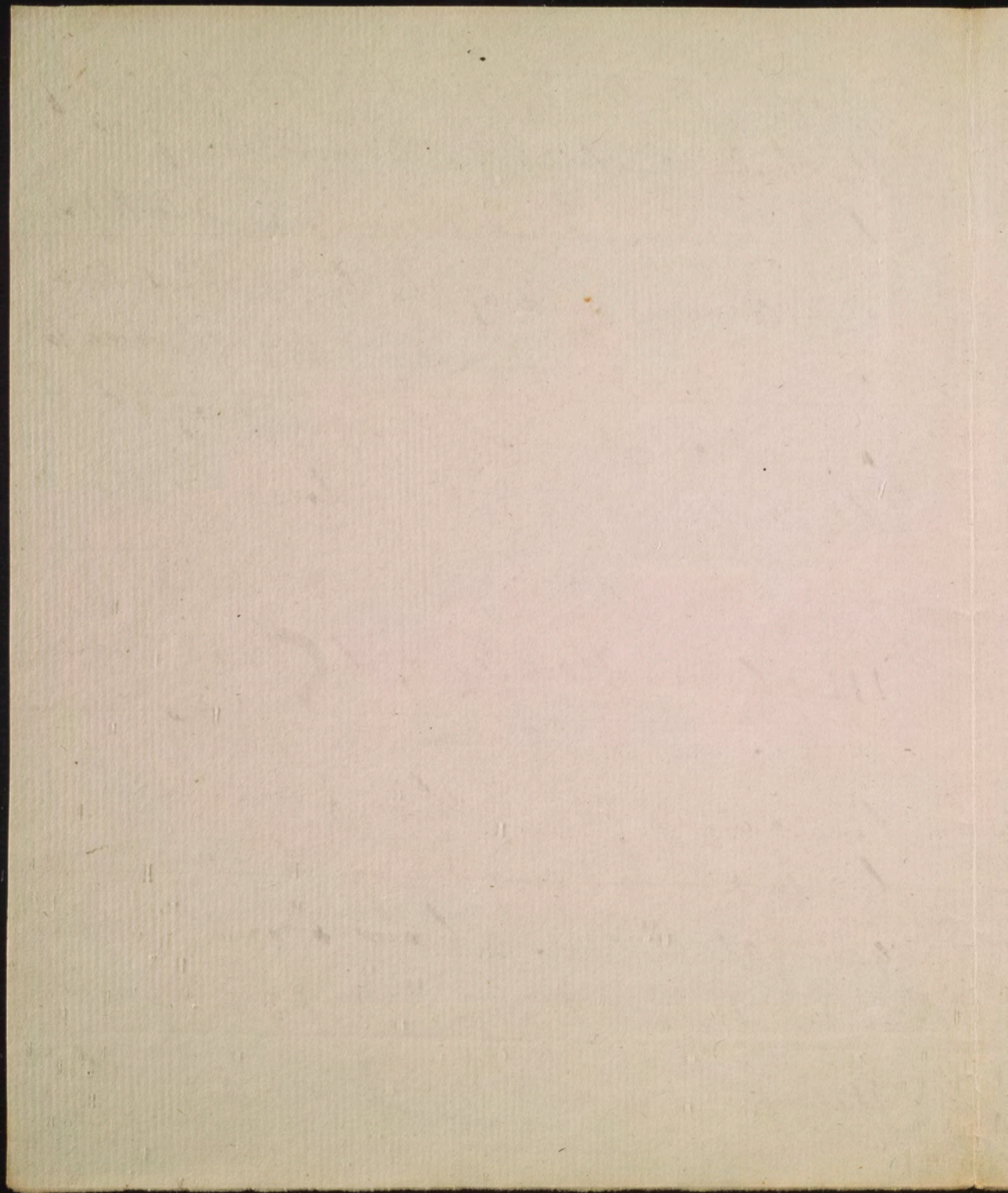
II: we proceed next to say a few words
upon the Serum of the blood. It is
water with several ~~other~~ matters, ~~and~~
~~formed by the action of portions of lymph~~
~~digested in it. When thus mixed with~~
~~lymph~~ it has been called Serosity by Mr:
Senac. Serum of the blood constitutes the
gravy of animal food, which when
obtained by itself affords a light, and
pleasant article of food for invalids.
It tinges the Symp of violets of a green
color. ~~By a chemical analysis it yields~~
~~Albumen, gelatin, sulphur - carbonate~~
~~of Soda - muriate of Soda - phosphate of~~
~~Soda, and phosphate of lime~~ These are
to furnish those fluids which are

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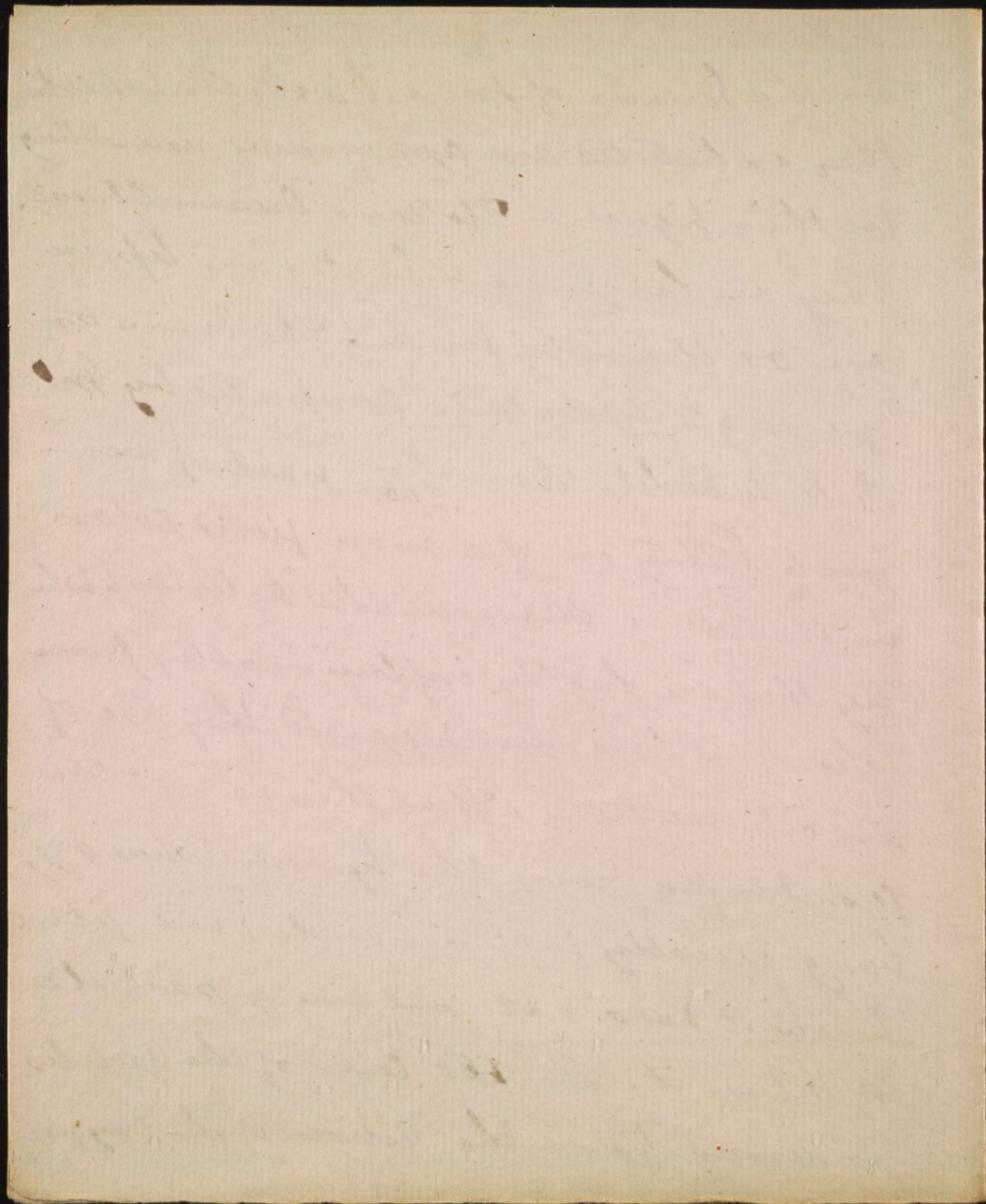
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necessary in the different Cells & cavities of the body such as the Ventricles of the brain, and pericardium, and to dispose and convey out of the body all saline and improper matters. It is the excess and stagnation of this part of the blood that constitutes local, and general Dropsies. —

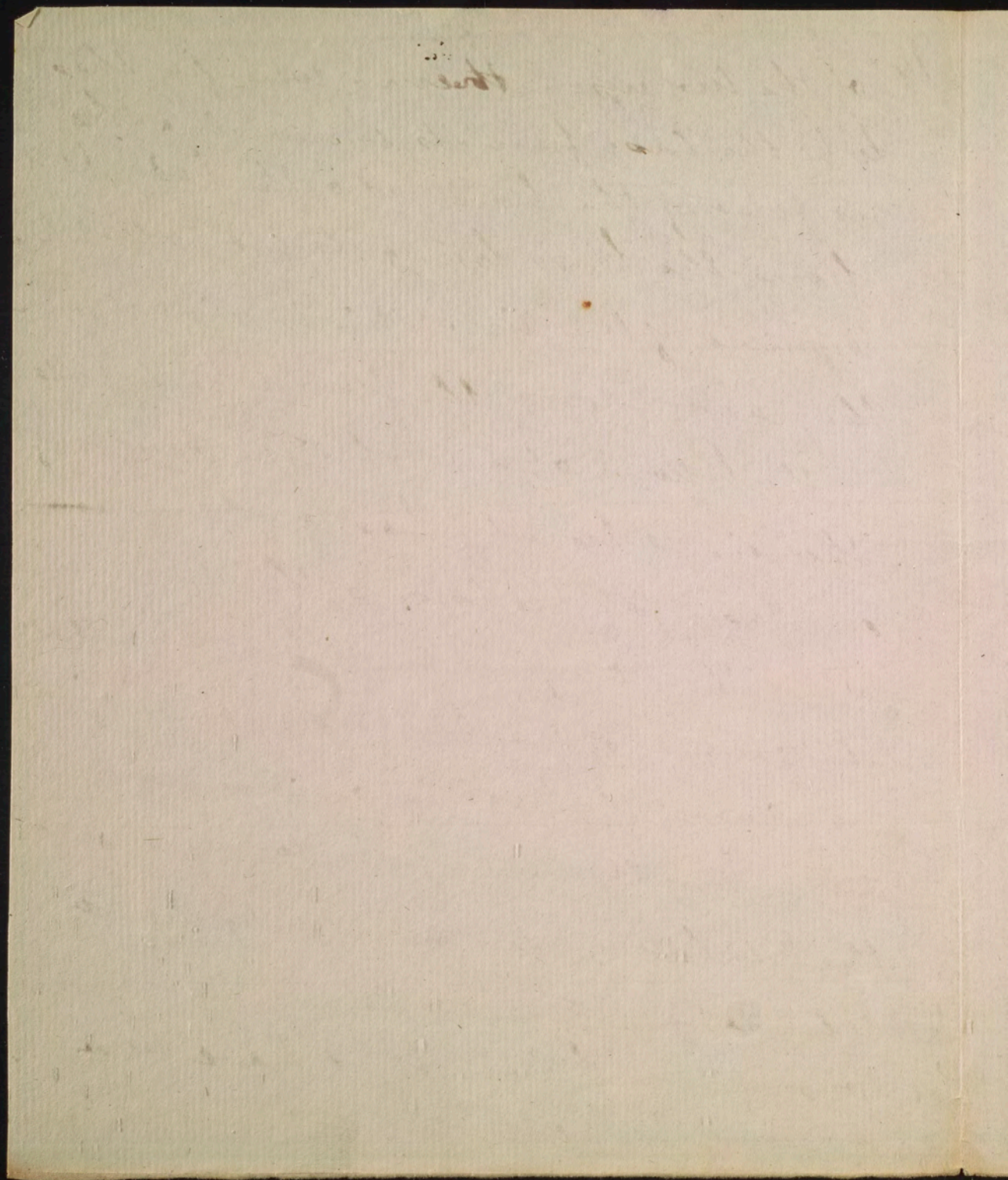
III The red Globules of the blood come next Under our notice. many disputes have existed about their form. The latest Observations prove, they are not quite globular. I ~~have seen~~^{have} them distinctly in the year 1769 thro' Mr. Hewson's microscope floating in the



in the Serum of some blood, in which they exhibited an appearance resembling in their figure a Holland Cream Cheese. They are larger in a Skate, and less in an Ox than in man. The diameter of a single Globule is computed by Mr. Bell to be less than $\frac{1}{3000}$ part of an inch. [They are of a more fluid color in the veins than in the Arteries]. When dry they are highly inflammable, from which it has been supposed they are of an oily nature. That this is not the case I infer from the lymph when dry, being equally inflammable, and yet we know it does not contain a particle of oil in it. The red color of the Globules is derived from the action of the Oxygen



14 of the Air upon them. we infer this
 to be the case from its encreasing the
 red color of the blood out of the body, &
 from the blood losing its red color when
 deprived of the Air. This is evident from
 the Dark color of the blood which falls
 to the bottom of a bowl. The Oxygen of
 the Air Dr Priestly has taught us in-
 creases the red color of the blood even
 when it is confined in a bladder. That
 the oxygen of the Air is the Cause of the
 red color of the blood is obvious from its
 imparting the same color to lead, and to
 the Sulphate of Iron when subjected to
 calcination. The red color which we
 observe in horns that have been
 preserved by Salt petre is Derived from



the oxygen contained in that salt.

The Dark color which is observed in blood that has stagnated in any part of the body, and which is sometimes perceived in the face in certain diseases of the lungs is occasioned by the incomplete oxygenation of the blood.

I have said the red Globules are not the most essential part of the blood. As a proof of this, we see perfect life in insects without them. We see moreover life & recovery from diseases in which there are scarcely ^{any} of them in the blood vessels to give the blood a red color. Dr. Stakke relates that the poor people in Barbadoes many years ago drank a liquor called mobby made of potatoes fermented with water which

15 Deprived their blood of its red color, & hence it became common to call very pale people in that island "Drooby faes".

Good health is connected with a due quantity of red globules in the blood vessels. Their healthy presence is known by a red color in the lips & cheeks. Their excess is known by a highly florid color of the face.

Their use is said to be to keep the lymph in a florid state by being diffused ^{thru} ~~over~~ it, ~~and~~ to give ^{tone} to the blood vessels & ~~thereby~~ to ~~conserve~~ furnish a substance capable of decomposing the oxygen of the air in order to obtain from ^{it,} that portion of heat which is generated in the lungs.

They sometimes like the lymph,

✓ But it sometimes exists in it in an elastic
state
~~to the presence of air in the blood~~
of which
a striking proof, occurred in our hospital
in the month of April 1811. Upon

opening ~~the~~ a Vein in the arm of a
man whose skull was fractured, the
blood issued ~~with~~ ⁱⁿ a full stream for a
while, and then suddenly stopped. This
stoppage was followed with a hissing
noise like the discharge of air from a
porter bottle. It was distinctly heard
not only by Mr. Jerny the Apoth^y of
the hospital who opened the vein, but
by ~~one~~ of the servants of the hospital
who held the bowl that received the blood.
After continuing for about $\frac{1}{4}$ of a
minute, it suddenly stopped, upon
which blood again issued in a full
stream from the ~~the~~ Vein. —

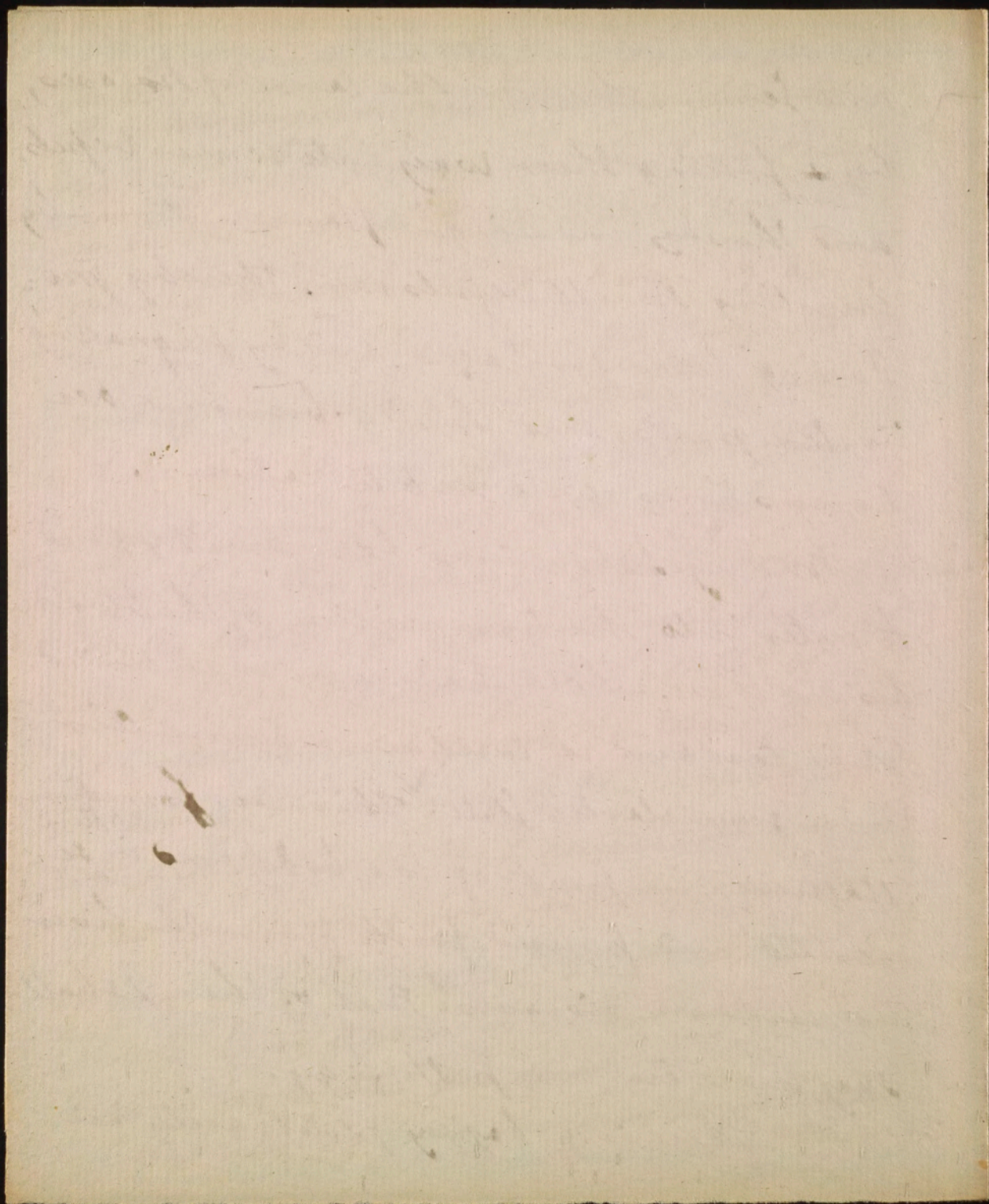
Casper tells us that air has sometimes
been found in the cups employed in ~~any~~ dry
cupping.

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and Serum, become the cause of diseases,
by ~~+~~ forcing their way into serum vessels,
and thereby inducing inflammation - by
bursting small vessels, and thereby pro-
-ducing hemorrhages, and by stagnating
in lax parts, and thereby bringing on
Congestions and Infiltrations.

Many Substances have been supposed
to enter into the composition of the blood
besides those which have been mentioned.
It is certain it contains some Air
in a semiclastic state. [✓] This air ^{often} sometimes
stagnates in parts of the body and is se-
-creted and poured forth from the liver
in certain Diseases. But of this I shall
say more in our pathology.

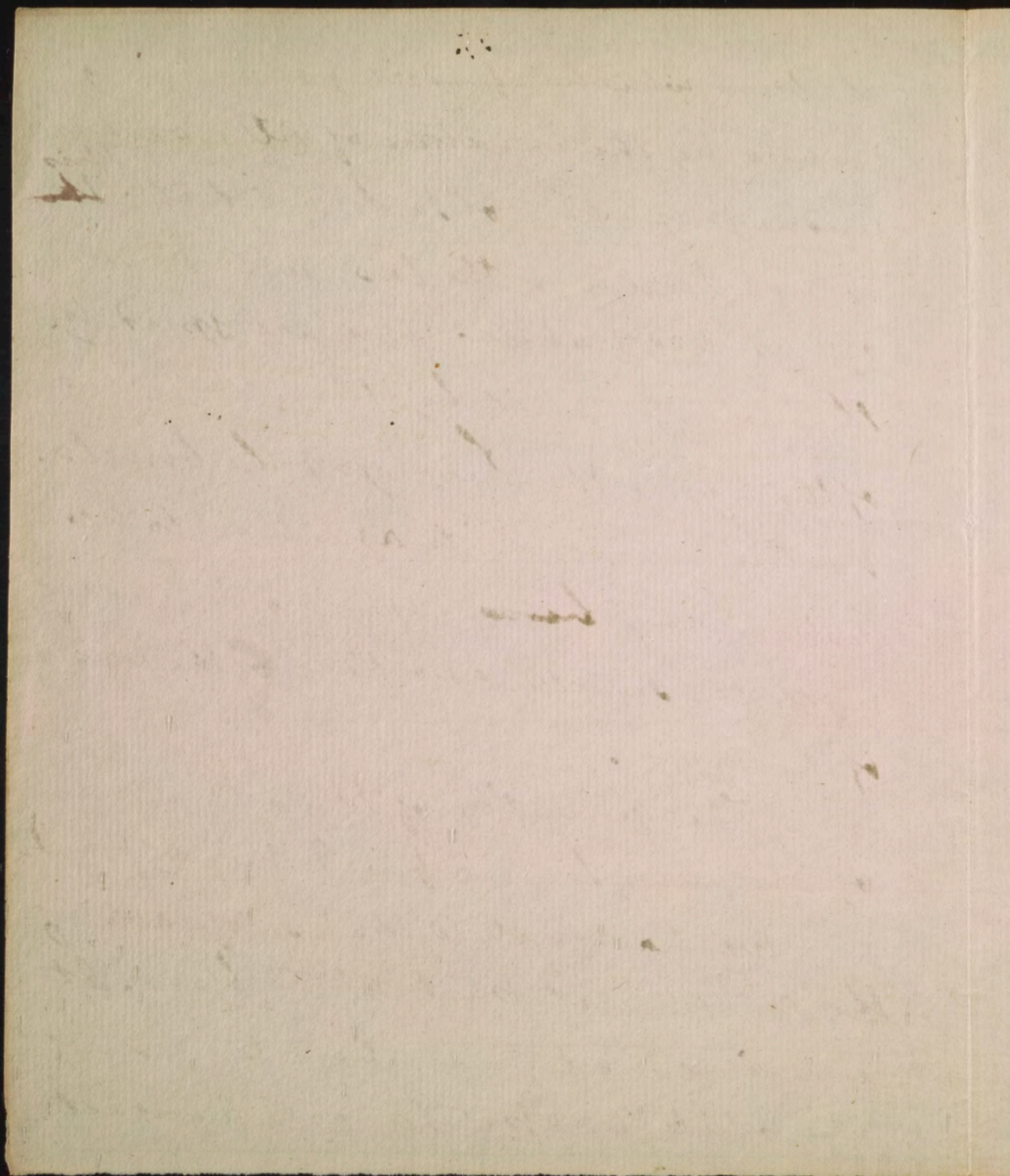
There is a happy peculiarity in



The blood which defends it from being injured by the mixture of bile, or ^{this} ~~an~~ undue proportion of salts with it. ~~The~~ is not however the case with matters of a putrid nature. They are speedily thrown from it by the channels of the liver, the kidneys & the bowels. I before mentioned its aptitude to be destroyed by ~~being~~ coming in contact with the smallest portion of the poison of the viper.

The quantity of blood in a man of ordinary size is five & twenty pints.

We have noticed the Use of each of the component parts of the blood. It remains that I mention the Uses of the whole mass. They are to impart a



portion of that life to the body which it
 derives from Chrenuli - to ~~convey~~ ^{impart} the
 sensibility to the nerves by giving tone
 to their contiguous blood vessels, ~~to~~ to afford
 a fluid from which all the secretions of
 the body ^{and perhaps to absorb and convey Oxygen to the} are derived. These various
^{muscles & nerves as the means of sensibility & irritability.} wonderful are its properties & Uses! It
 was after a Survey of both probably that
 Gross declared the life of every animal
 to be in its blood.

~~The~~ By a Chemical Analysis, the blood
 has been found to yield the following
 matters - water - fibrin, - Albumen,
 Gelatin, - Hydrosulphate of Ammonia,
 Soda, Subphosphate of Iron, - muriate
 of Soda, phosphate of Soda, and phosphate
 of lime. — Gelatin exists in animals of the

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17 lowest order. It is in a thin and
 hinged plates in the Testaceous - it is of
~~more~~ a thicker consistence in insects;
 It is combined with albumen in creta-
 ceous animals and worms. It is
 combined with albumen & fibrin in
 certain reptiles and in fishes, but it
 exists in the greatest ^{perfection} ~~quantity~~ and com-
 -bined with the greatest quantity of
 albumen and fibrin ^{in birds - quadrupeds - & the human}
~~species.~~ The gelatin is
 formed first, in the production of animal
 matter, out of which are formed albumen
 & fibrin in the order in which
 they have been mentioned, —

